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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,833	06/25/2001	Steven Verhaverbeke	004730	2675
32588	7590	10/16/2003	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			JOLLEY, KIRSTEN	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/891,833

Applicant(s)

VERHAVERBEKE ET AL.

Examiner

Kirsten C Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-7, 11-13 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-13, drawn to a method of mixing chemicals in a dispensing process, classified in class 427, subclass 240.
 - II. Claims 14-16, drawn to a method of pushing a chemical into a valve system with a gas, classified in class 251, subclass 149.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case Invention I is unrelated to Invention II because Invention I is directed to a method of mixing chemicals and using them in a dispensing process, whereas Invention II is directed to a method of pushing a chemical into a valve system and is not related to a process of dispensing.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Michael Bernadicou on May 5, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-16

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withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claim 11 is objected to because of the following informalities: In claim 11, line 6, it appears that the word --amount-- is missing after “measured” and before “of”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected as being vague and indefinite because the preamble states “A method of mixing chemicals in a single wafer process,” however the process steps of the claims do not recite a mixing step nor do they require more than one chemical. Therefore, it is not clear how

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the claim is directed to a method of mixing chemicals when only one chemical is introduced and no mixing appears to occur. Claims 2-3 are rejected because they do not correct the deficiencies of claim 1.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Akimoto et al. (US 5,938,847).

Akimoto et al. discloses a method of supplying a chemical to a wafer surface comprising the steps of: flowing a chemical into a valve system, filling the tube with said chemical to generate a measured amount of said chemical, and using said measured amount of chemical in a single wafer coating process (see col. 12, lines 3-25). Akimoto et al. teaches the valve system at col. 13, lines 10-21, and that the amount of chemical applied to the wafer is prescribed or measured at col. 14, lines 45-49. The tube/pipe of Akimoto et al. inherently has a known volume.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades (US 3,291,347).

Blades discloses a method of flowing a chemical into a valve system having a tube of known volume; filling said tube with said chemical to generate a measured amount of said chemical; flowing a second liquid into said valve system and pushing said measured amount of said chemical into a chamber with said second liquid; continuing to flow said second liquid into said chamber until a predetermined level is reached to form a mixed solution; and dispensing and using said mixed solution. Blades teaches using a six-port valve to perform the method of its invention (see Figures 5-6 and col. 4, lines 15-42), and teaches that the metered quantities of first and second fluid may be sent to a mixing duct (col. 3, lines 40-43). Blades lacks a teaching of using the mixed solution in a wafer process, however it is well known that blood samples are dispensed on glass slides which are wafers. It would have been obvious for one having ordinary skill in the art to have dispensed the diluted blood samples from the process of Blades on slides in order to perform testing on the samples in a laboratory. Blades also lacks a teaching of using DI water as the second liquid to dilute the blood samples. It would have been obvious for one having ordinary skill in the art to have used DI water as the diluting fluid in the process of Blades because DI water is a neutral liquid that would not alter the chemistry or results of blood samples.

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13. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades as applied to claims 1-2, 4, and 6 above, and further in view of Cazer et al. (US 5,071,547).

Blades does not teach the use of two 3-port valves for mixing or diluting its chemicals. Cazer et al. is cited merely for its general teaching in col. 6, lines 31-34, "anytime a valve is a four-port valve it can be re-placed by a set of two three-port valves, where one port of each valve provides for connection to the other three-port valve." Upon seeing the teaching of Cazer et al., it would have been obvious to one having ordinary skill in the art to have substituted two 3-port valves for the one 4-port valve of Blades (illustrated in Figures 1-4) with the expectation of achieving the same results since Cazer et al. teaches the equivalence of two 3-port valves and one 4-port valve.

14. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toge (US 5,134,445).

Toge discloses a method of using a 6-port valve to dispense chemical samples to an inspecting apparatus including the steps of: flowing a chemical sample into a first tube in the valve system having a tube of known volume and filling said tube with said chemical sample, which inherently generates a measured amount of chemical sample, flowing a sheath liquid into a second valve of the valve system having a known volume and filling the second tube with said sheath liquid, which inherently generates a measured amount of sheath liquid, and flowing air into the valve system to push the amount of chemical sample and amount of sheath liquid into a tube/chamber for inspection. While Toge does not disclose mixing the chemicals in its process (instead the air is used to separate the chemical sample and sheath liquid), it is noted that the

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limitation of mixing is only present in the preamble. The preamble is not a limitation on the claims if it merely states the purpose or intended use, and the remainder of the claim completely defines the invention independent of the preamble. *Stewart-Warner Corp. v. City of Pontiac, Mich.* 219 USPQ 1162; *Marston v. J.C. Penny Co., Inc.* 148 USPQ 25; and *Kropa v. Robie and Mahlman*, 88 USPQ 478.

Toge lacks a teaching of what material is used as the sheath liquid. It is the Examiner's position that it would have been obvious to one having ordinary skill in the art to have used DI water as the sheath liquid because the sheath liquid should be neutral and is used for cleaning, and it is well known in the art that DI water is neutral and non-reactive and often used as a cleaning liquid. In addition, Toge teaches using air as the separating liquid instead of inert gas. It would have been obvious to one having ordinary skill in the art to have substituted inert gas for air because the ingredients in air, such as oxygen, can often react with chemicals, and use of an inert gas as the separating gas would ensure that the air separating the chemical sample and sheath liquid does not alter or react in any way with the liquids. As to claim 13, it is noted that Toge teaches the use of at least two 3-port valves in its valving system.

Allowable Subject Matter

15. Claims 8-10 are allowed. The prior art does not teach or fairly suggest the claimed method of mixing chemicals using a valve system having a tube of known length and then combining the measured amount of chemical and DI water with a flow of DI water, and dispensing the combined flow onto a spinning wafer. While the prior art of Verhaverbeke et al. (US 6,132,522) and Verhaverbeke (US 5,972,123) teach the use of 3-port valves to add a

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measured amount of chemical to a DI water stream, there is no suggestion or motivation in the references to use a valve system where DI water is mixed with the chemical within the valve system (and the chemical is pushed through via DI water) in combination with the processes of their inventions. Additionally, there is not motivation to combine the valve used for sampling in the processes of Blades and Toge with the processes of Verhaverbeke et al. '522 or Verhaverbeke '123.

16. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 5 is allowable because while Blades teaches a method of mixing chemicals as claimed in independent claim 4, there is not motivation to use the apparatus of Blades in a method of dispensing a mixed solution onto a single spinning wafer, as discussed above.

Conclusion


17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bernosky et al. (US 5,490,611), Nakata (US 3,045,702), and Shackelford (US 4,243,071) are additionally cited to illustrate the state of the prior art with respect to the instant invention.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 703-306-5461. The examiner can normally be reached on Monday to Thursday and every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.


Kirsten C. Jolley
Patent Examiner
Technology Center 1700

kcj